The EXCAVATING ENGINEER

Vol. XXI NOVEMBER 1927 No. 11

Quarrying Operations of the Kansas Portland Cement Company

This Company Uses Four Shovels in Their Quarry Operating on the Bench System with a Shovel on Each Bench.

TAKING the main highway going west from Kansas City, Missouri, across the Missouri River and down through Kansas City, Kansas, about 18 miles of driving will bring one to the Kansas Portland Cement Company plant, just outside the city limits of Bonner Springs to the east. This district between Kansas City and Bonner Springs is well known for its gravel, rock and limestone deposits. Along the highway at frequent intervals are railroad sidings extending into numerous sand and gravel plants. All of these plants are dredging operations, each one with its little suction dredge out in the river, and with its pipe line extending back to the preparation plant.

As you get down near Bonner Springs, the Kansas Portland Cement Company plant bursts suddenly into view at a turn in the road. The plant is right at the edge of the road, resting on the first slopes of a huge hill. Back of the plant over the tops of the smokestacks you can see the quarry, built ledge on ledge on the side of this hill, which contains the extensive deposits of rock, limestone and shale from which the material is taken for the manufacture of their cement.

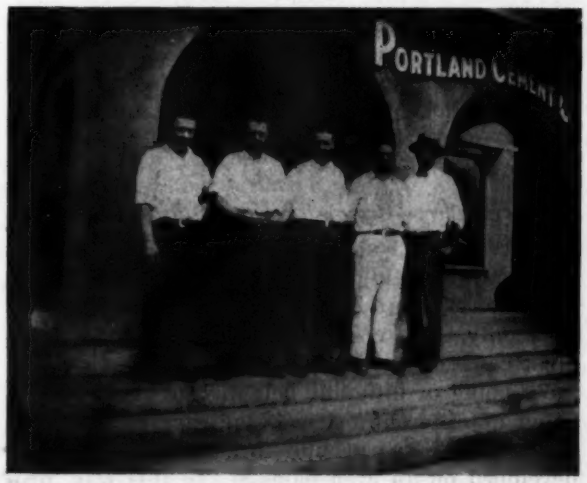
Plant Rebuilt When Taken Over by International

This plant was first opened in 1907 as the Bonner Portland Cement Company. In 1923 it was taken over by the International Cement Corporation, given the name of Kansas Portland Cement Company, and has since been operating as a subsidiary of the International. When it was taken over in 1923, preparations were immediately started to entirely rebuild the plant, install new equipment and improve methods. Today, about all that remains of the old plant is the old primary crusher house. The rest of the buildings have been torn down, and now practically all new buildings are in place.

This plant supplies quite a wide range of markets, with, of course, Kansas City and vicinity as its major market. Its other markets extend out over Kansas, Nebraska, Missouri, Louisiana, Oklahoma and other nearby states. The output is approximately a million barrels of cement per year.

Quarry Operated in Four Benches

In going through the operations of the plant and describing the methods, we start first with



A Part of the Office Personnel, a View Taken on the Front Steps of the Office.

the quarry. The quarry is perhaps one of the most modern and most completely equipped cement plant quarries that we have viewed for some time. Operating on a hillside, it has been developed in four benches, with a shovel on each bench.

The top bench is overburden, a face of twenty to twenty-five feet high being carried; the material consists mainly of clay, with a little rock mixed in, and is of a texture which makes good digging. The next bench is about eighteen feet high, consisting of a rock formation which is taken into the plant. The third bench down is about twenty-four feet high, consisting of a gray shale which is wasted, being hauled to a dump. The bottom bench varies from thirty-five to forty feet high, consisting of a heavy limestone rock, grey in color. This material is also taken into the plant.

A Full Train of Rock Just Entering the Crusher House.

On the bottom bench, back out of the way from operations, is a completely equipped machine shop and repair station. With this service the locomotives, cars, drills and shovels are given repairs and service by a steady force of men. In this way the quarry machinery is kept in tip-top condition at all times, and any necessary repair work is taken care of in a hurry, so that production losses will remain at a minimum.

Three Crews for Four Shovels

There are four shovels operating in the quarry, and an interesting item in the plan of quarry operation is that the four shovels are operated with only three crews. As some of the material must come out a little faster than the other, the faces being of different heights and the material being of different textures for digging ease, the crews are shifted around to keep all the shelves developed on an even balance. In this way, production is kept on an even balance, and the system has worked out very satisfactorily. This also accounts for the varying percentage of time worked by the different shovels.

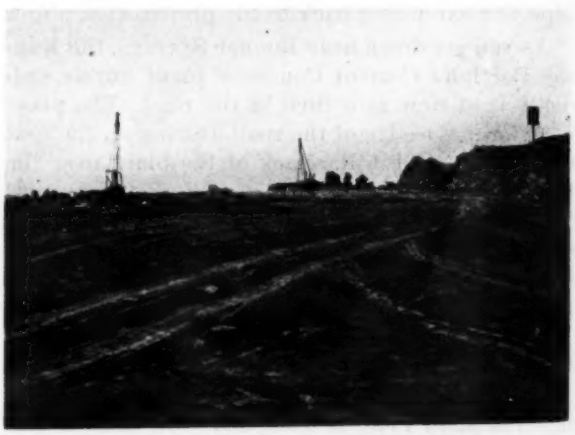
Taking Out Limestone from the First Bench

At the bottom bench a Marion railroad shovel is working. This machine was installed in 1923. Basing the output report on the records tabulated for the month of June, this machine worked 74 per cent of the time during that month, and handled an average of 120 tons of rock per shovel hour. The haul into the crusher house is about 700 feet from this machine. There are seven locomotives used for haulage in the entire quarry and about sixty cars. Five of the locomotives are steam and the other two are gas. There are three Porter steam, two Davenport steam and two Vulcan gas. The cars used are Western 4-yard side dump. Steam locomotives are used on this bottom bench with eight cars to a train.

On the second bench up, a Vulcan steam railroad shovel is being used to take out the shale. This machine was installed in 1916. Basing output for this machine also on the June record, it worked one-fourth of the time and handled 55.62 tons per shovel hour. The material on this bench, a gray shale, is wasted. It is hauled over to the south in the opposite direction from the plant, a distance of about 1000 feet and dumped into a little valley.

The third bench up is being operated by a Bucyrus steam railroad shovel, which was installed in 1906. This was the first shovel installed at the plant. The material here is of a shale rock formation and is taken into the plant. Working about 35 per cent of the time, the full month average on output for this machine was 55.03 tons per shovel hour.

The top bench is worked by a practically new machine, a Bucyrus 50-B electric shovel. This



Looking Down Along the Second Level, Showing the Two Cyclone Electric Drills in Operation.

machine was installed in 1926. It is perched up high on the hill, taking off the overburden. Taking its output record for the month of June, it worked a little less than half the time, and its full month average was 80.23 tons per shovel hour. The two new Vulcan gas locomotives with eight cars each are used to serve this machine and

take away the overburden. Around a bend to the south at a distancce of a little over a 1000 feet is the dump for this overburden. A little marshy lake is being filled in with both this material and the shale from the second shelf up.

Blasting Operations

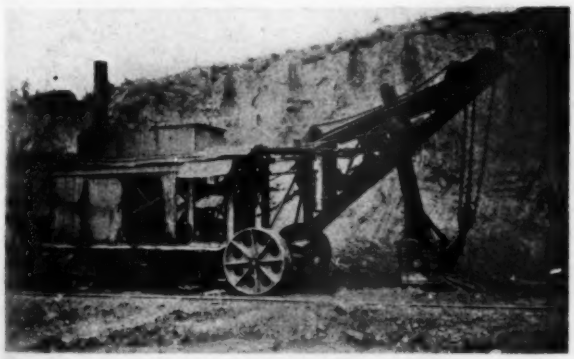
Drills are kept in action at all times preparing holes for blasting down the rock at the bottom shelf. Two electric Sanderson-Cyclone Drills dig away constantly. These are six-inch drills, and holes are drilled about 44 feet deep, 12 feet apart and from 15 to 18 feet back from the face. From eight to ten holes are shot at a time. On the upper rock shelf an Ingersoll-Rand air drill has been put into service.

The quarry is operated only one shift of nine and one-half hours per day, while the plant is operated constantly with two twelve-hour shifts.

Plant Operations

As the rock comes into the plant, the cars are pulled through the tunnel of the crusher house and dumped over a Fairmont crusher. The material is received from underneath by a conveyor, which takes the crushed rock to a storage house where it is handled by a telpher clamshell.

It is interesting to go through the plant and follow the material from the time it leaves the crusher until it goes tumbling into sacks as finished material and is loaded into freight cars. The wet process of manufacture is used, as is used in nine other plants operated by the International



An Old Machine Which Had Been in Use for Eighteen Years and Was Still in Use When Displaced by the Bucyrus Electric Machine.

Cement Corporation. This is a very modern plant and its processes are the very latest.

It is an excellent lesson in modern manufacturing methods to follow step by step the constant development of the material from the rock to the finished product — to examine the plant, to follow the material along conveyors, to see it drop out of sight for mixing processes, through sludging processes, to catch a view of it again here and there, to see it in a wet, muddy form, to see it bouncing over vibrating screens, to peer into the huge fiery kilns, three of which are in operation, measuring 8 by 9 by 220 feet, to walk past the roar of pulverizers, and finally to see sack after sack of the finished cement being filled at the loading station, where the sacks are packed ready for shipment on a siding of the Union Pacific railroad.

Safety is one of the big factors at this plant, and they have made an honest effort to eliminate

The Electric Shovel Removing Overburden at Fourth Level.

accidents. The report in the middle of August was there had been no lost time accident in the quarry since October 1925, and no lost time accident in the plant since December, 1926. That is certainly an enviable record.

The principal officers of the company at present are: F. R. Bissell, chairman of the Board; H. Struckmann, president; J. A. Lehaney, vice-president and manager; F. J. Jursits, assistant treasurer and assistant secretary; L. J. Wheeler, superintendent.

"When I was in China I saw a woman hanging from a tree."

"Shanghai?"

"Oh, about six feet."

"Going to get married?"

"Yep, in the winter."

"How do you know?"

"He said it would be a damn cold day when we married."

Daddy—"What do you think of your new mamma, Elsie?"

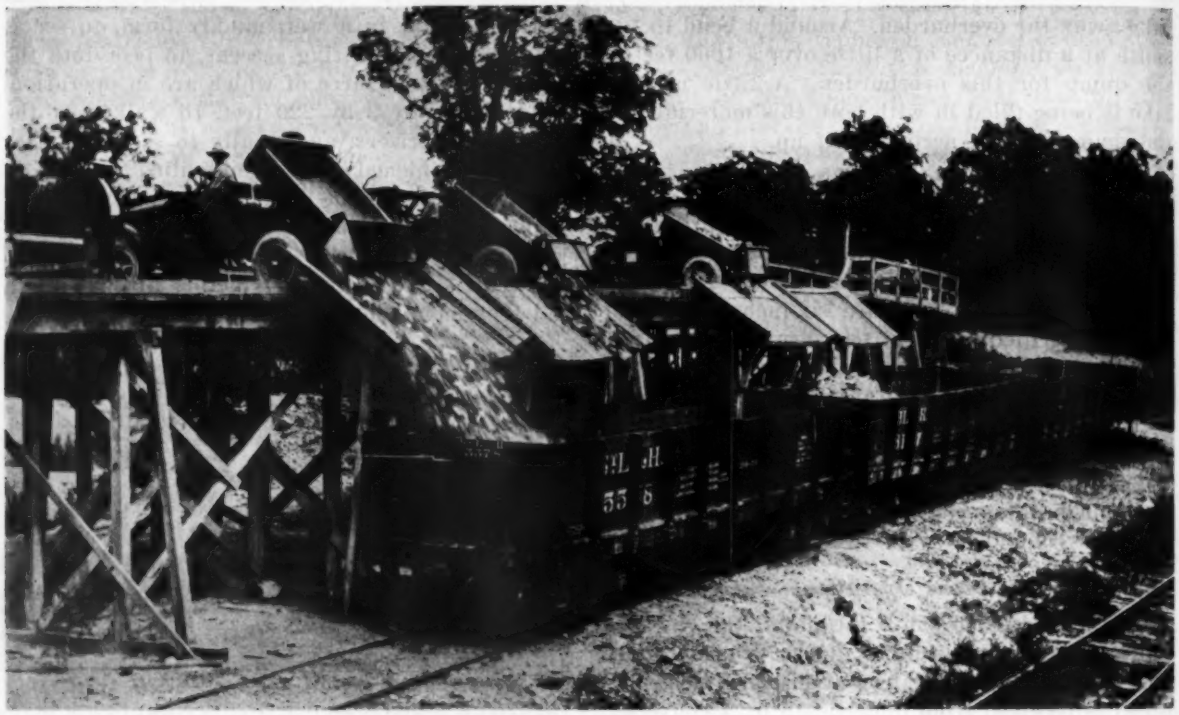
Little Elsie — "Well, Daddy, if you took her for new, I think you got cheated."

A maiden fair in a dairy cloak
Went out to milk the family goat,
She patted, cooed, and said, "Nanny be still."
The animal said, "I ain't Nanny, I'm Will."
— *Making Paper.*

Night Watchman: "Young man, are you going to kiss that girl?"

"No, sir."

Night Watchman: "Here, then, hold my lantern."
— *Exchange.*



The Loading Dock at the Whiteside Plant.

An Airplane View of the Walsh Plant at Vandalia, Missouri.

Digging Fire Clay at Jonesburg, Missouri

Stripping Overburden with a One and Three-Quarter-Yard Shovel and Loading Out the Clay with a Three-Quarter-Yard Machine.

FIFTY years ago, in 1875 to be exact, the Dixon-Young Company was organized at St. Louis, Missouri, for the manufacture of Refractories. It was seven years later that this group was reorganized into the firm of Thos. Coffin Company, Ltd. This company manufactured Refractories, as did the first, and built up an enviable reputation for themselves. In 1890 the Walsh Fire Clay Products Company was formed and took over the Thos. Coffin Company.

Thirty-seven years ago the Walsh Company was comparatively small, but this has rapidly increased until they are now considered one of the big factors in the fire brick industry of the United States, and their brands of fire brick and specialties are known throughout the country for their dependable qualities.

The Overburden Dump at the Whiteside Pit — the Cars Are Pulled Up on the Trestle by Means of a Cable System.

Original Plant Produces Fire Brick for the Glass Industry

The original company started manufacturing in a little plant in North St. Louis, which is today given over exclusively to the manufacture of material for glass furnaces, and its output is nationally known for the quality of its product. The Walsh Company today operates both this older plant and a new plant at Vandalia, Missouri, which is one of the newest additions to the fire brick industry in the United States, and is the last word in engineering and processes. This new plant is composed entirely of fire-proof buildings; its machinery is driven electrically by power generated at a central station located in the plant,

The Loading Dock at Jonesburg — the Clay Is Shipped Direct from the Loading Dock to the Plant.

its output is standard nine-inch brick, special tile blocks and various kinds of material to suit the demands of the many industries requiring refractories. It is at this plant that the High-Alumina Walsh-Anchor brands of super-refractories are produced — refractories which have aroused considerable interest all over the country where overloads and higher temperatures are made necessary in obtaining larger outputs from furnace operations.

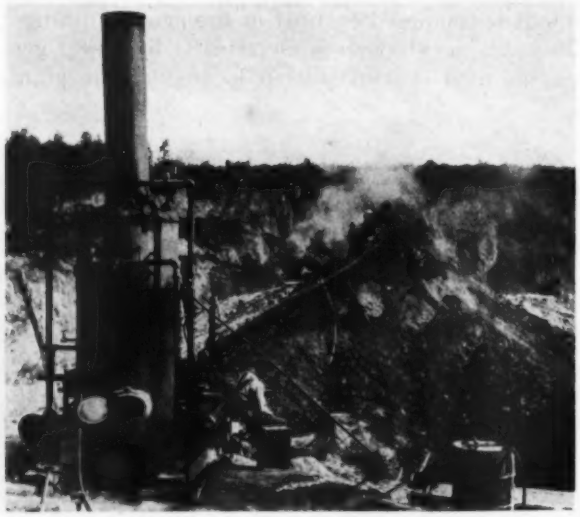
Loading a Car of Select Lump Clay at the Jonesburg Pit.

Several Pits Supply Raw Materials

These two manufacturing plants need several kinds of clay for their raw material, and because of this the Walsh Fire Clay Products Company

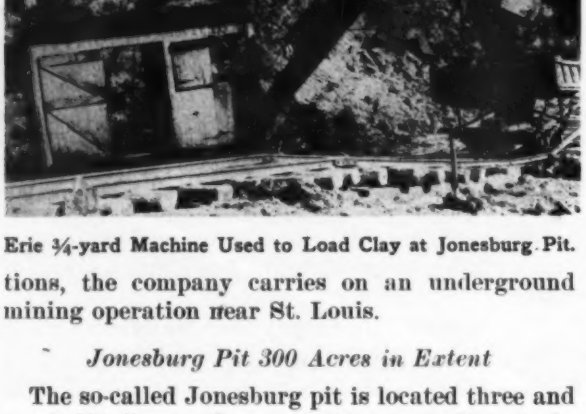
operate a number of pits and mines within easy shipping distance of their two plants.

The pit to which this story is devoted is located at Jonesburg, with tipples for loading the raw material located on the Wabash Railroad. At this



Hoist Used to Pull the Cars of Overburden Up Out of the Pit to the Dump.

plant two steam shovels are at work, a Bucyrus 1¾-yard steam machine and an Erie ¾-yard steam shovel. Another pit, known as the Walsh Mine, on the St. Louis & Hannibal Railroad is operated by a Bucyrus ¾-yard shovel and an Erie ¾-yard shovel. Hand mining in open pits is carried on at Owensville, Missouri, and at a number of smaller pits on the Rock Island and Frisco. In addition to these open pit, or strip mining operations, the company carries on an underground mining operation near St. Louis.



Erie ¾-yard Machine Used to Load Clay at Jonesburg Pit.

Jonesburg Pit 300 Acres in Extent

The so-called Jonesburg pit is located three and one-half miles southeast of the town of Jonesburg, and was opened in the year 1916. The workable pit area is about 300 acres in extent, and it is expected that one-half of this will be workable, although to date only one-third of the workable area has been opened.

Before any new part of the pit is opened, the section is proved by prospecting in much the same manner as open cut coal mining regions are explored. In this way it is possible to accurately follow the deposit of clay in removing the cover. In some places the overburden encountered is extremely light, in other places it runs considerably heavier, running from a depth of ten feet up to forty feet. The 1¾-yard steam shovel has proved very satisfactory in this work.

Under the overburden is found a clay of semi-plastic flint, of which the selected portions are very pure. The texture of the material is extremely fine, and the clay runs from 38 to 40 per cent Alumina; impurities are very low. This fire

Bucyrus ¾-yard Machine Used to Load Clay at the Whiteside Pit.

clay is taken out by an Erie ¾-yard steam shovel working on the lower level.

750 to 1000 Yards Overburden Removed Per Shift

The 1¾-yard shovel, working on the overburden, operates from nine to ten hours every day, and moves from 750 to 1000 yards of material, which is hauled away or overcast as the shape of the cut at that point dictates. Normally it is necessary to haul away the overburden. The machine operates on coal from central Illinois, and water for the boilers of the various equipment on the job is supplied from a catch basin located in a portion of the pit that has been worked out.

The fire clay loaded by the Erie ¾-yard shovel following the larger shovel is served by two trains of five-yard Western side dump cars. These cars usually operate in trains of four, and are hauled by Porter 18-ton saddle-tank engines.

The output of the clay-loading machine runs approximately 400 tons per ten-hour day. The material is hauled out from the pit over three and one-half miles of private, narrow-gauge (36 inches) railroad (owned by the company) and delivered at the tipple on the Wabash Railroad.

The Erie ¾-yard Machine Which Is Used to Remove Overburden at the Whiteside Plant.

The narrow gauge line is single track, and is equipped with suitable sidings located to keep traffic moving on the main line. Within the pit, it is, of course, necessary to be constantly shifting the track, so as to have both shovels served without any interruption. Steam-driven pumps, 4-inch suction and 3-inch discharge, manufactured by Worthington, are used to keep the pit dry, for as it is located considerably below the level of the surrounding country, rain water necessitates more or less constant pump operation.

The officers of the Walsh Fire Clay Products Company are: Robt. A. B. Walsh, president; N. S. C. Walsh, vice-president; Chas. W. Parker, vice-president; T. M. Pierce, secretary.

It is to Mr. Chas. W. Parker that we owe our thanks for the material and photographs used in the preparation of this article.

Chicago's New Sewage Treatment Plant

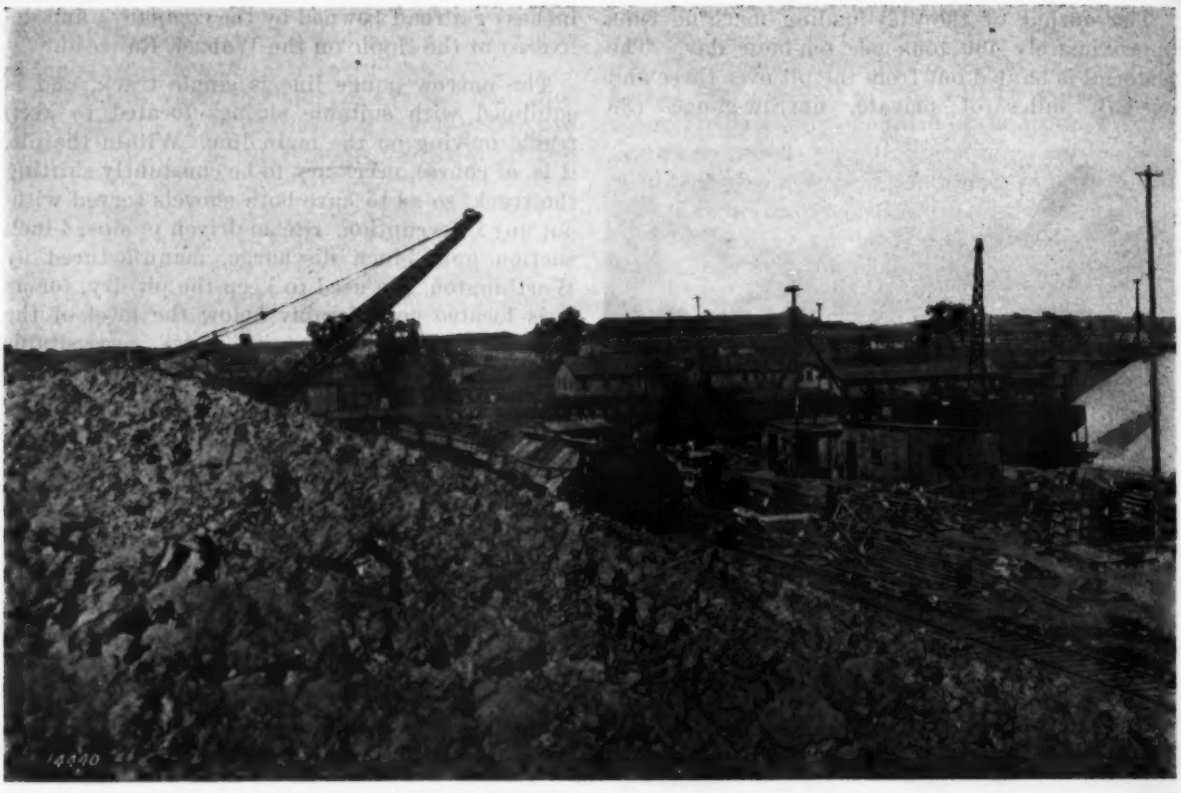
This Huge Plant on the West Side of Chicago Will Serve an Area of 100 Square Miles. The T. J. Forschner Contracting Company of Chicago is General Contractor.

ONE of the interesting construction programs progressing within Chicago at the present time is that of the West Side Sewage Treatment Works. The plant is located at the southerly outskirts of Cicero. When the plant is completed it will take care of the sewage from that part of the City of Chicago between Fullerton Avenue and the Chicago River and Main Channel, the Loop District, certain limited areas south of the river, and the towns along Salt Creek and the lower Des Plaines River, comprising a total area of about 100 square miles. The eventual program is that this plant shall be of such a capacity that it shall be able to receive a flow of 400 million gallons of sewage a day.

The T. J. Forschner Contracting Company is the general contractor, one of Chicago's best known organizations for handling large projects of this type and character. Excavation here amounts to a considerable amount, in fact, totaling to approximately 300,000 cubic yards. The material consists mostly of clay. By examining the photographs closely it will be noted that this clay is hard packed and comes out in quite large chunks. Quite a little moisture in the material makes it sticky, causing close cohesion. Although this condition offered hard digging for the excavating machinery on the job, the material was consistent in its formations, and made possible a good steady output, with consistent yardages day after day.

There are three main divisions in the excavation, namely, for the tanks, the pump house and borrow excavation. Material from the borrow pit was necessary for the building up of an embankment upon which the skimming tanks will be placed. Large as were the other excavations, they did not furnish enough material for this embankment, especially as a great deal of material has

Looking Out Across the Borrow Excavation, Showing Tractor-Drawn Trailers on Way to Be Filled.



Dumping Material Taken from the Tank Bottom Excavation. The Material Is Dumped on the Ground and Then Thrown Up on the Spoil Pile with a Dragline

The Bucyrus Class-14 Dragline Excavating for Tank Bottoms.

to be used for filling in around finished structures, to give a finished appearance to the project as a whole, and to build up good grade around the buildings.

Excavation for Pump House

The pump house excavation was perhaps the largest single hole dug on the entire job. This part lies along the southeast corner of the plot, next to the embankment being built up. When completed, the hole measured over fifty feet in depth, about 150 feet in width, and over 400 feet in length. This amounted to approximately 90,000 cubic yards of material. To handle this division of work a Bucyrus 80-B steam dragline was made use of for the heaviest part, and a Northwest 1½-yard gasoline dragline was used as an auxiliary tool for clean-up work and for trimming purposes. The Northwest also helped on some of the heavier work where possible. When the two draglines had

Trailers Pulled by Caterpillar Tractor Dumping Material on the Embankment — This Material Is Taken from the Borrow Excavation.

finished with the hole there was little or no finish trimming to do. They had done a complete job, one typical of good dragline work.

For handling the spoil, a number of 5-yard La Plante-Choate trailers pulled by 10-ton Caterpillar tractors were used. Two trailers were used behind each tractor, and four tractors were in operation. To demonstrate good dragline work with a good operator at the levers, the big machine dumped direct into these wagons with great success, the spill being at the very minimum. The loaded wagons were hauled by the tractors over to the embankment. At the embankment two other 10-ton Caterpillar tractors fitted with bull-dozers shoved the material around to the proper position after it was dumped from the trailers. What packing was not taken care of sufficiently by the tractors and trailers constantly running over the em-

Construction Work Well Started on the Pump House. Note the Concrete Mixing Plant in the Background with the Belt Conveyor Along the Bank for Transporting Concrete.

bankment was taken care of by an Austin 10-ton roller.

Borrow Excavation

Coming now to the finished building up on the embankment where the skimming tanks will be placed, we find the balance of the material taken from a borrow pit and a little from the tank excavation. It might be well to state here the reason for placing the skimming tanks on this higher elevation, which ranges from ten to fifteen feet. In the first place sewage will flow from these skimming tanks through the Imhoff Tanks to the trickling filters, to be built at a future date, and discharge finally into the canal. This higher elevation will furnish a good gravity flow all the way. In the second place, on account of the necessity of going down for a considerable distance for footings in the case of the filters, placing the tanks at a higher elevation will eliminate what would other-

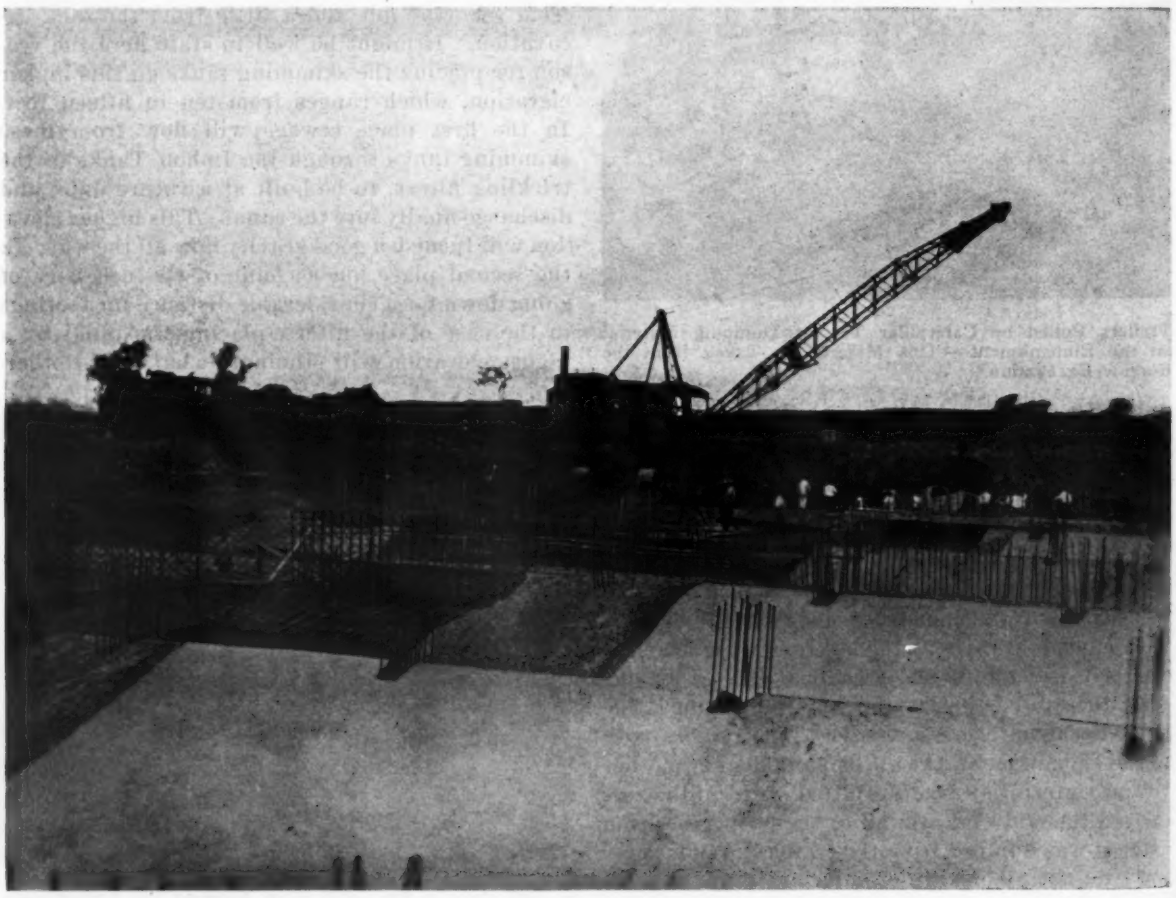
A Full View of the Cable Way, Showing the Construction of the Towers.

wise evolve into an expensive procedure. A Northwest 1¼-yard gasoline shovel was put into this borrow pit, taking out the clay, dumping into the La Plante-Choate trailers pulled by the Caterpillar tractors, which were formerly used to serve the dragline at the pumping house excavation. The borrow pit was located toward the west from the embankment. As the trailers were filled they were taken up an earth incline to the top of the embankment, across the top and over to the east edge. Here the tractor and wagons went right over the edge, which was so steep that it was almost a nose dive, dumping their loads as they went over, thus gradually building out. When the embankment was finished it contained some 130,000 cubic yards of material, all of which was packed hard by the tractors and trailers going over it constantly, together with the bull-dozer and the Austin 10-ton roller.

A. J. Forschner, Brother of T. J. Forschner.

Digging for the Tank Bottoms

Excavation for the tank bottoms over on the north side was done by a Bucyrus Class-14 dragline. This part involved the preparations of the ground for the trough or V-shaped bottoms of the Imhoff tanks. Eventually there will be three batteries of these tanks, covering quite an extensive territory. The finished plant will take care of the wastes and sewage of a population of nearly 1,900,000. First, the entire area which is to be covered with the tanks was gone over and excavated, making a level floor. This was not especially deep, averaging about five feet, although a little deeper in places due to the lack of uniform level of the ground. After the main excavation for the tank area was completed, the dragline set to work digging out the trough or V-shaped indentations for the tank bottoms. Good dragline work was demonstrated here, in that very little hand trimming was necessary. The dragline kept but a short distance ahead of the concrete work here, so that in the case of heavy rains the work would not be



A Closeup of Excavation and Concrete Work for the Tank Bottoms.

lost, and have to be done over again. Each of the three tank batteries calls for an excavation 500 feet by 555 feet. The total excavation for each battery is approximately 120,000 cubic yards.

The spoil from these tank bottoms is dumped into 12-yard Western dump cars. These are made

The Bucyrus 80-B Dragline Doing Some Backfill Work.

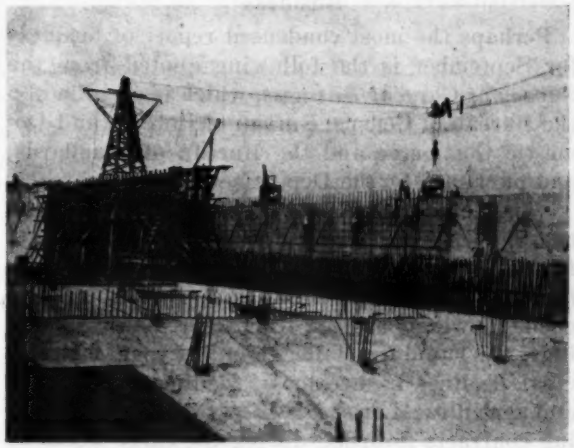
up into five-car trains and pulled by Vulcan saddle tank 36-ton steam locomotives. There are three of these trains. From the dragline the trains pull out to the south, switch over a little to the right, and then back up straight toward the east, across the south side of the tank area, then north at the east side of the tank area. Here the material is dumped right on the ground and picked up by a Page 1½-yard dragline. This machine pulls the material up from the dump, and stacks it into a large spoil heap along the east side, where it will be used later to fill in around the tanks and wherever else it may be needed.

Most Complete Concrete Plant

The concrete work on this job is handled very efficiently. A most complete central mixing plant has been erected just to the east of the tank area. The stock piles are located to the north of this. The material comes in on bottom dump railroad cars, is dumped through trap doors into underground dumps, and then carried to the top of the stock pile by two electrically operated portable conveyors made by the Barber-Greene Company. The stock piles are placed on a wooden floor over a series of trap doors. A long inclined conveyor extends underneath, which takes the material to the hoppers on the mixing plant. The final mixing is taken care of by two T. L. Smith and one Foote 1-yard mixers.

In transporting the concrete to the tanks, three 7-yard buckets are used. These are handled by a flat car pulled by a Vulcan locomotive. While one of the buckets is being filled, another is being transported, and the third is being emptied into the forms. A large cableway takes the loaded buckets from the flat cars, and carries them out over the tank forms, distributing the material. The total concrete yardage for the tank battery will be about 70,000 cubic yards and about 17,500 cubic yards for the pump station.

To distribute the concrete to the pump house forms, a belt conveyor over 500 feet in length extends straight south along the east side of the structure. This conveyor was made by the Link-Belt Company. A smaller portable conveyor then takes the concrete from the longer one and distributes it over the forms.



One of the Seven-Yard Buckets Carried by the Cable Way Emptying Concrete Into the Forms.

R. H. Burke is chief engineer for the T. J. Forschner Contracting Company and superintendent of the pumping station construction. L. B. Fugitt and H. J. Schuman are superintendents on the battery construction. L. B. Barker is resident engineer for the Sanitary District.

She was distinctly a foreigner. She asked for talcum powder.

"Mennen's?" asked the clerk.

"No, vimmins."

"Want it scented?"

"No, ay better take it with me."

Ambitious

Grocer (to boy): "Mm! So you want a job, eh? Do you ever tell lies?"

Boy: "No, but I'd be willing to learn."

—*The Progressive Grocer.*

Professor: "Er — my dear — what's the meaning of this vase of beautiful flowers on the table today?"

His Wife: "Meaning? Why, today's your wedding anniversary."

Professor: "Indeed? Well! Ah — pray let me know when yours is, so I may reciprocate."

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THE EXCAVATING ENGINEER PUBLISHING CO.
F. O. WYSE, Manager-Editor
South Milwaukee, Wisconsin
Printed in the U. S. A.

Business

Perhaps the most condensed report of business for September is the following quoted from the *Survey of Current Business,* which is compiled by the Bureau of Census, Bureau of Foreign and Domestic Commerce and the Bureau of Standards, and published by the Department of Commerce.

"The dollar volume of business during September, as seen from figures covering check payments for the first three weeks, was larger than during the corresponding period of 1926. Distribution of goods, however, as seen from figures on car loadings, was running smaller than last year, the principal declines occurring in loadings of mineral and agricultural products. The value of new building contracts awarded during the early weeks of September showed a falling off from the corresponding period of 1926. The production of bituminous coal was running higher than in the preceding month but was lower than in September of last year. The output of crude petroleum receded from the preceding month but was still substantially greater than the production a year earlier. Lumber output was running somewhat higher than in September, 1926.

"Wholesale prices continued to recover during September. Loans and discounts of Federal reserve member banks expanded during the month, being substantially higher also than a year ago. The Federal reserve ratio averaged higher than in the corresponding period of last year. The prices of stocks on the New York Stock Exchange continued to average higher, reaching a new high record during the month. Bond prices advanced, as compared with both prior periods.

"Interest rates on call loans averaged higher than in the preceding month but were lower than in the corresponding month of 1926. Time-money rates were lower than in either the preceding month or the same month of the previous year. Business failures during September were more numerous than in the same period of 1926."

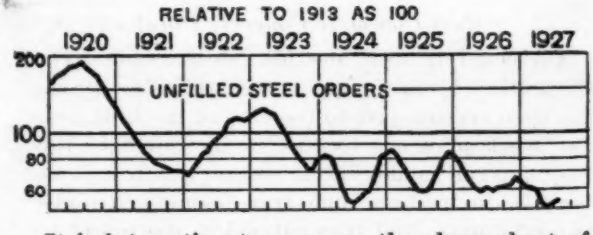
September construction contracts in the 37 states east of the Rocky Mountains amounted to $521,611,000 according to F. W. Dodge Corporation. This amount was 6 per cent under August and 7 per cent below the total for September of last year. Construction in these 37 states includes about 91 per cent of the total in the United States.

The most important items in the September contract record were: $204,877,200, or 39 per cent of all construction, for residential buildings; $126,229,500, or 24 per cent for public works and utilities; $59,617,400, or 11 per cent for commercial buildings; $48,545,800, or 9 per cent for industrial construction; $29,243,700, or 6 per cent for educational buildings; and $21,970,200, or 4 per cent, for social and recreational projects.

New construction started in the 37 Eastern States during the first nine months of this year has amounted to $4,796,482,100; compared with the total for the same period of last year ($4,840,779,800), this figure shows a decline of less than 1 per cent.

Contemplated new work to the amount of $627,291,700 was reported in September, representing an increase of 1 per cent over the same month of last year, and a decrease of 9 per cent from the August figure. The amount of winter construction has been steadily on the increase, and it is sincerely hoped that still more winter construction will be carried on this year. There is some promise of this in the larger volume of contemplated work.

The extremely low volume of unfilled steel orders is not any indication of decreasing business activity, but rather a sign of the times and shows in some degree the vogue of "hand-to-mouth" buying habits of industry today.



It is interesting to compare the above chart of unfilled steel orders with the chart for new building construction and automobile production; it will be seen that some months of this year have been in excess of last year.

The Business Weather Map for October published by *"The Magazine of Business"* shows most sections of the country flying flags which indicate "average business conditions," although "below average" is still indicated along the Mississippi Valley and in Florida.

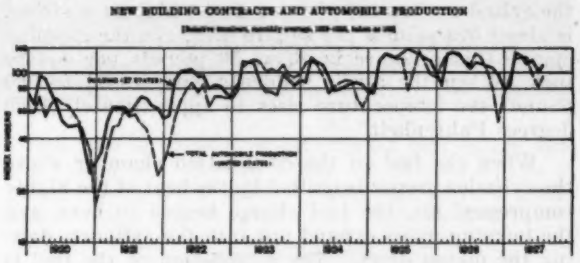
As this is written there are many indications

that the farmers of the country will be more prosperous this year than they have been for some time past. The Chicago Journal of Commerce quotes the following statements as the combined opinion of editors of four livestock and farm papers of the country, known as the Corn Farm Belt Dailies. "Agricultural prosperity has returned, but by many it is unrecognized. Production is well adjusted to consumption in all important lines. Farm equality has been restored, prices are at a profitable level and the future is promising."

Cotton seems to be doing considerably better than was expected a month ago. The price should be high enough to enable the grower to get good returns on a somewhat short crop.

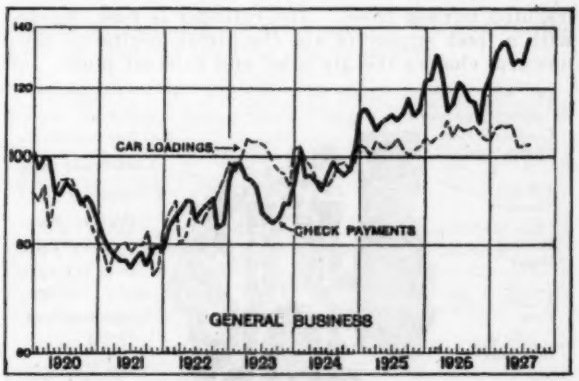
The money situation still remains very favorable. The Federal Reserve discount rate stands at 3½ per cent. Time money at New York for the week ending October 1st stood at 4⅜ while call money was 4 per cent. During the middle of October price movements of the New York stock exchange were erratic. An expected decline in the volume of brokers' loans did not develop, and a firmness followed the news, although the rise of call money to 4½ caused a slight reaction in the middle of the month. This raise of call rates may only be the result of the usual mid-month shifting of funds.

It may be interesting to note particularly the situation of automobile production on the chart



above. It should be remembered that one of the largest producing company's is shut down at the present time preparatory to producing a new model. Thus the present situation indicates considerable activity for the rest of the industry.

Car loadings and check payments, as indicated by the following chart, would lead to an optimistic forecast.



DEVICES YOU OUGHT TO KNOW ABOUT

New Developments in Diesel Engines Field for Diesel Power Widens

The past few years have seen many interesting developments in Diesel engines, and a rapid widening of the field of application for this type of prime mover. Thousands of interesting applications have been made, which have demonstrated that the Diesel engine will produce a horsepower hour with a fuel and lubricating oil cost of approximately one-half cent or a kilowatt hour for approximately three-quarters of a cent. With labor and other charges added the total power cost seldom is more than 1½ cents per kilowatt hour.

Most of the developments in Diesel engines have been in connection with the largest sizes, and not so much attention has been given the smaller units. In the past year, however, a number of higher speed, lighter weight Diesel engines have been brought out which places the Diesel engine on a competitive basis with the gasoline engine in these similar sizes. There are so many places where the power problem can be solved by a self-contained prime mover in ratings from about 30 h.p. and up that these new developments are of decided interest.

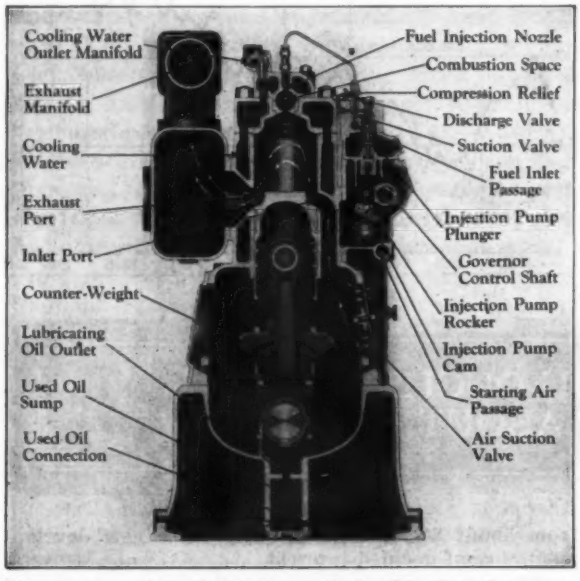
The accompanying cross section through one of these engines shows the simplicity of the modern Diesel engine in a very striking way. In this engine the fuel oil is injected into the combustion space above the cylinder proper by means of a plunger pump which is driven by a cam mounted on a shaft running along the side of the engine about half way up. This shaft is driven by means of gears from the main crank shaft. One of these plunger pumps is required for each cylinder.

The fuel is sprayed through a nozzle located at the top of the cylinder, and the injection of the fuel is timed so that it enters the combustion chamber at about the time the piston reaches the top of its stroke.

Now, the big difference between the gasoline engine and the Diesel engine is the fact that the Diesel engine ignites the charge of fuel oil by the heat of compression. The compression pressure in a Diesel engine, that is the pressure of the air at the top of

the cylinder when the piston is in its highest position, is about 500 pounds per square inch. In the gasoline engine this pressure is about 50 pounds per square inch. When the air is suddenly compressed to 500 pounds the temperature rises to approximately 1000 degrees Fahrenheit.

When the fuel in the combustion chamber above the cylinder proper is ignited by the heat of the highly compressed air, the fuel charge begins to burn and the burning gases expand out into the cylinder, driving the piston down. The combustion of the fuel is not rapid as it is in the case of the gasoline engine. There is no explosive action but rather a slow burning of the fuel, so that the action is more nearly like that of steam in a steam engine. The piston moves down and first uncovers the edge of the exhaust port, and the burned gases expand into the exhaust manifold. As the piston moves on a slight distance further it uncovers the air inlet port, and the air in the crank case which has been slightly compressed by the downward movement of the piston now flows up through this air inlet port and blows out the remaining burned bases. The cylinder is now charged with a fresh supply of air, the piston begins to move upward, closing the air inlet and exhaust ports, and



This cross section of a 15 h.p. cylinder Diesel engine operating at 800 r.p.m. illustrates the working parts of the Diesel engine.

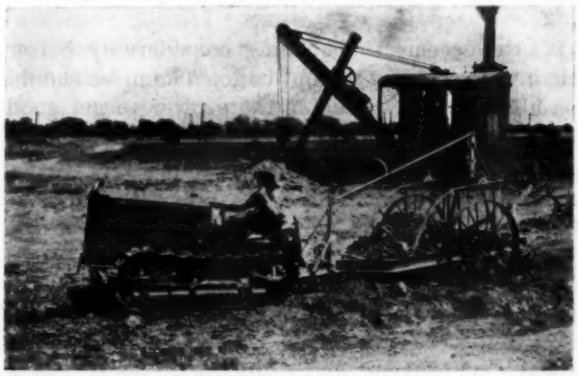
the cycle is repeated. As the piston moves up a new supply of fresh air is drawn through the valves in the crank case.

If there is any one feature that the operator of a Diesel engine demands it is simplicity with reliable operation. The fewer parts there are on an engine, the less possibility there is for trouble. The two-cycle, airless injection Diesel engine, as illustrated, is as simple an engine as it is possible to build.

The reliability of Diesel engines has been greatly improved in the past few years by improved manufacturing methods. There has been as much progress made in the building of Diesel engines as there has been in the building of automobile engines. In fact the modern Diesel engine is as well built as the engine in the highest priced automobile. This holds true not only in the small Diesel engines but also for the larger sizes as well.

The Miami Trailer-Scraper Company Announce New Model Scraper

The Miami Trailer-Scraper Company announces a new model of the Miami Scraper for use in connection with the Model 20K Cletrac Tractor. The accompanying photograph shows the scraper and tractor in actual use. The Miami One-Man Power Scraper



is exactly as the name implies, or a power scraper whereby one man or the tractor driver loads, transports and automatically dumps a full three-quarters of a yard of earth each and every trip without stopping the tractor. The above is the water level capacity of the scoop pan. The scoop pan can be filled with a full-rounded load of earth running from 21 to 24 or 25 cubic feet.

From THE MAIL BAG

"Dear Sirs:

"As contractor for Little River Drainage near here, I have approximately 300,000 tons of rock that has been blasted out of the ditch and now piled on the banks of the ditch for two miles. This is practically all in one man stone size, and experts report 80 per cent of it has excellent value for agricultural lime. The balance is very high grade for concrete or hard road surfacing. With good management and a few thousand dollars cash and credit I estimate the profits to be $100,000 or more. To put this in shape and get the money out of it I will require funds and men.

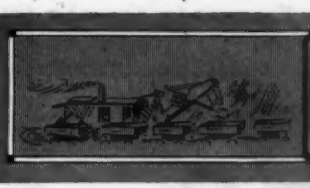
"My proposed enterprise has merit. The lime as fertilizer is needed. Some plant and working capital will bring good returns to all concerned. I want active or silent associate on any reasonable terms.

"Yours truly,

(Signed)

TERE A. CLARK, *Contractor.*"

Let anyone who is interested in this project address Mr. Clark in care of The Excavating Engineer. — *Ed.*



SHOTS FROM THE FIRING LINE

Arkansas Notes

BY F. W. KNABLE

A. A. Davis Construction Company, Kansas City, Missouri, Cook & Ransom, contractors, Ottawa, Kansas, M. E. Gillioz, contractor, Monett, Missouri, and James Spencer, contractor, Mulvane, Kansas, all received awards for highway work in the State of Arkansas recently.

Central States Notes

BY H. C. EMERY

The Ash Grove Lime & Portland Cement Co. of Kansas City are progressing nicely on the construction of the new cement mill at Louisville, Nebraska. The construction is being supervised by A. K. Froelich, assisted by F. H. Brammer, superintendent and assistant, respectively. The foundation is being poured for the new machine shop at this writing.

F. L. Busche of Omaha is doing the grading in Dubuque County for the American Paving Corporation. He is using his Bucyrus 20-B gas shovel on the job and Cullen is operating the levers. Mr. Busche also has the contract for unloading and hauling the material for the paving job the American Paving Corporation has in Harrison County, near Council Bluffs.

The Iowa State Highway Commission awarded the following contracts at a letting at Ames, September 20th: Federal Aid Project No. 14, Tama County, consisting of 3.314 miles of earth road, involving 231,716 cubic yards of excavation, to George W. Condon Company of Omaha; Federal Aid Project No. 103, Harrison County, consisting of 3.314 miles of earth road, involving 72,198 cubic yards of excavation, to E. J. Wilson of Omaha, Nebraska.

C. E. Walker has made excellent progress with his road job near Readlyn, Iowa. He reports having moved 24,000 yards in the past month with his Bucyrus D-2 dragline.

Chicago and Vicinity

BY H. C. HELT

Nicholas Santucci Co. of Niles Center was awarded the Park Ridge sewer contract recently, amounting to about $770,000. Mr. Santucci is a very successful large sewer contractor, and just recently finished an $800,000 sewer contract for the Village of Niles Center.

Krenn & Dato Building and Construction Co. of Chicago report that their Bucyrus 50-B Diesel dragline is producing large yardages and they are well pleased with it. They have run as high as 180 cubic yards an hour operating 1¾-cubic-yard drag bucket on a 50-foot boom in clay loam. Their fuel cost is around $3.00 a day for 10 hours.

Underground Construction Co. of Chicago were low on the bids that were recently opened for contract No. 2 Salt Creek intercepting sewer. Their bid was around $1,900,000. This is a seven and one-half foot sewer in tunnel, and will require some time to complete it.

Dowdle Bros. were awarded the North Side Sewage Treatment Plant contract, calling for laying in place 60-inch cast iron pipe and miscellaneous work amounting to about $1,500,000. This is what might be called a clean-up job for this sewage plant.

W. J. Newman Co. were recently awarded a large basement excavation job in Detroit, Michigan, for the new Kerns Store Building. The Newman Co. is rapidly spreading out, and covering more territory with their engineering operations and contracting work.

The City of Chicago recently opened bids on the 74th Street sewer job. The only bidder was Carmine Roberts of Chicago; his bid was $361,000, which was above the engineer's estimate and the job has been readvertised again.

Connecticut Notes

BY H. C. DAVIS

John Hoye & Son have an Erie type "A" grading and cutting new streets at Linwood, West Hartford, Connecticut. Toney Salvatore is running the shovel and John Piaggo is keeping up the steam.

Lewis Hoyes is running a shovel for The Avon Quarries, Avon, Connecticut.

I saw Albert Carocci recently. He originally came from West Virginia and got his shovel schooling on railroad work in that part of the country. Albert is now superintendent of the Clark Barone Quarry, New Haven, Connecticut.

Mike Pastore, engineer, is working for The R. & B. Construction Company of Bridgeport, Connecticut.

Engineers H. W. Ackerley and Henry English are working for the Lowell Construction Company, Windsor, Conn.

Harry Barrett is running a gasoline crane for Osborne & Barnes, Danbury, Connecticut.

J. B. Sanford, Jr., is in charge of the new Fairfield cut-off on the Boston Post Road near Bridgeport, Connecticut. Wm. C. Maher is the runner of the Erie and Geo. Boughton is the fireman. This work is being done by Osborne & Barnes, Danbury, Connecticut.

Spotty Elliott is running an Erie for D. G. Holmes, Bridgeport, Connecticut.

Sam D. Camelo is running an Erie gas-air and Toney Cicerchio an Erie Steam for O'Neil Bros., Hartford, Connecticut. They are digging the basement for the Travelers Insurance Company's new building.

Engineer Frank Motto and fireman Earnest Haollock are working for James Dickie, Bridgeport, Connecticut.

Robert Hills is running a P. & H. for Leverty & Hurley, Bridgeport, Connecticut.

I had a letter from our old friend George Thomas. He is back at Rochester, New York, once more. There must be something besides shovels there to attract him. I will make a bet it is a blond or a brunette.

B. J. Bixby is running an Erie for C. A. Bence, New Britain, Connecticut.

Benie Susi is running an Erie for Peter Suzzio, New Britain, Connecticut. Raymond Di Placido is firing.

Engineer Henry Anderson is working for Kibbie & Sons, Springfield, Massachusetts.

Edson McClaflin is running an Erie for The Kennedy Construction Company, Holyoke, Massachusetts.

Engineers Angelo Toffiin and Anthony Pizzatola are working for The Aron Certified Sand Company, Aron, Connecticut.

T. J. Connor was recently awarded the contract for the cellar excavation for the new Beach Hotel at Bridgeport, Connecticut. Dan Bowden is running the Erie.

SHOTS FROM THE FIRING LINE — Continued

Engineer E. H. Seldon is working for C. C. Kibby, Hartford, Connecticut. Mr. Kibby recently finished a job at Main and Talcott Streets, Hartford, Connecticut.

Detroit and Vicinity

BY P. M. RICHARDS

A. C. (Al) Duesing has moved to 1450 Lakeview Avenue, Detroit, so as to be nearer his Bucyrus 30-B which is digging one section of the Martin Drain in Macomb County for Bishop and Weir. The other three sections were awarded to S. A. Healy, S. J. Fattore and Thos. D. Nolan.

Coolsnet Bros. have completed their section of a large sewer in Dearborn.

Blanck & Gargaro have started work on two sections of a Detroit city sewer recently awarded to them.

R. D. Baker Company are at work on a large sewer in Clawson, using their Bucyrus Class-14 and also their 50-B.

Illinois and Indiana Notes

BY D. C. ANDERSON

Had lunch with Frank Trucco of Mid-City Excavating Company the other day. Tried to talk excavating, but unfortunately Frank was excavated too much when he bet on Dempsey. Consequently I couldn't get his mind around to the subject of dirt. This is a warning to Referee Barry to keep away from the boom of Frank's Erie.

Bierd, Lydon & Grandpre were successful in obtaining contract for sewage disposal plant at Springfield, Illinois. Mr. Grandpre and Mr. Burke are in charge. Pearse, Greeley and Hansen are the engineers.

Green & Sons of Chicago are anxious to dispose of their Bucyrus 70-C on caterpillars at a bargain price, as they have no use for it now. It is in fine shape, and would make an ideal machine for a small quarry. A letter to Mr. Shackleton or Robert Green will bring full information.

Pronger Bros. of Blue Island are progressing nicely on their various contracts. Will Pronger is in charge.

Alex Pizza of Blue Island has several jobs on hand which are coming along fine.

Consoer, Older & Quinlan are among the largest consulting engineers in the city. They have charge of plans for about twenty-five suburban towns.

Art Erffmeyer, engineer for Tuthill Brick's Vulcan, was in a wreck down in Kansas the other day. The car turned over on the clay road. Fortunately Art came out without being hurt.

Powers Thompson Company of Joliet continue to knock off the jobs at the rate of about two a week. They specialize in road paving, and I'd hesitate to guess at the total amount of the contracts they have at present.

National Limestone of Joliet have enjoyed a very successful season. Their Bucyrus 70-C has been busy loading stone for a Santa Fe contract. Mr. Carter has done a lot of travelling to different points on the Santa Fe lines, and it is rather hard to find him in town.

City of Gary continues to grow like a house on fire. The municipal government is keeping pace, too, and is spending thousands of dollars on expansion and improvements. Mr. Cottingham is city engineer, while A. P. Milton of Gary is consulting engineer.

Welch Bros. of Gary are the leaders in Gary on basement excavation. They operate a truck crane and a crawler crane.

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wire rope dollars

1. Tru-Lay Brand lasts longer — resists unstranding, high stranding and kinking.
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Two trains of Western 5-yard Dump Cars at work on the D. L. & W. R. R. at Danville, N. J., July, 1927. James Ward, Contractor

100% Western

On the four-track work of the D. L. & W. R. R. which is now under construction between Boonton and Dover, N. J., every contractor on the job is using WESTERN Dump Cars.

Railroad contractors, whose profits depend on their ability to do the work cheaper than the railroads can do it, use WESTERN Dump Cars.

Great Strength
Long Life
Extraordinary Track Riding Ability
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Few Repairs Easily and Quickly Made

These are some of the outstanding features to be found in WESTERN Dump Cars.

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Western Wheeled Scraper Company

Pioneer Builders Western *of Dump Cars*

Aurora Illinois

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SHOTS FROM THE FIRING LINE — Continued

Indiana Notes

BY B. R. ANDRES

Fred Wills has a drainage job at Plainville, Indiana, and is using a Bucyrus 30-B Diesel dragline.

George Pontarelli expects to finish his sewer job at Evansville before bad weather sets in.

The Columbia Quarry Co. have installed a new Bucyrus electric tunnel shovel at their Valmeyer quarry and report it working very satisfactory. They have recently gone to mining their stone, and eventually will discontinue outside operations.

Matthews Bros. of Erie, Illinois, have just completed their drainage contract at Gorham, Illinois, and have moved their Bucyrus 50-B to Perryville, Missouri.

Kansas Notes

BY F. W. KNABLE

Work on the erection of the United States Coal Company's Pittsburg, Kansas, coal tipple is progressing nicely. They expect to begin loading operations by November 1st.

J. H. & B. Coal Company's coal tipple, located near Mulberry, Kansas, was destroyed by fire last month. The United Iron Works, Pittsburg, Kansas, received contract for erection of a coal tipple, work on which is being rushed. They expect to be loading again by October 15th.

J. B. Watts Construction Co., Concordia, Kansas, received award for construction of concrete paving in Leavenworth, Kansas, $67,791.

Reed & Wheelock Construction Company, Clay Center, Kansas, received award for the construction of Federal Aid Project 98-A, 4.593 miles concrete, $109,094.

Koehler Construction Company, Sterling, Nebraska, received award for construction of 9.558 miles graveling on Kansas Project No. 112, near Holden, Kansas.

A. G. Sherwood Construction Company, of Independence, Kansas, received award for the construction of 3.733 miles of concrete or brick pavement located near Montgomery, Kansas, $94,355.

Minnesota and Wisconsin Notes

BY C. W. HAY

The Geo. J. Grant Construction Co. have completed their grading work at Perham, Minnesota, and report having made some very good yardage figures.

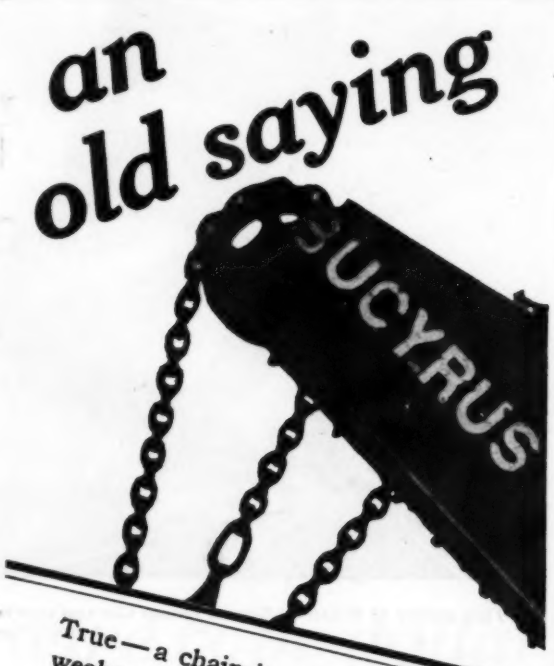
Two paving jobs were let at Wisconsin Rapids, Wisconsin, on October 11th. The R. R. Birdsall & Sons Co. of Racine, Wisconsin, were low bidders on the Wausau-Merrill Road of 7 miles, including about 60,000 cubic yards of excavation. Vogt-Mengel Co. of Wisconsin Rapids were low on a 6-mile job in Wood County.

Missouri Notes

BY F. W. KNABLE

Work on Tebo Coal Company's Bucyrus 225-B steam shovel, located at their mines, Deep Water, Missouri, is progressing very nicely. Work is being done by the Pittsburg Boiler & Machinery Company, Pittsburg, Kansas.

Metropolitan Paving Company, St. Joseph, Missouri, recently received award for paving and draining northwest extension of Parkway Boulevard, 2 inches asphalt and 6-inch base, 50,000 yards, $34,744.



True — a chain is no stronger than its weakest link. And — a shovel is no stronger than its weakest part. Don't let chain be the weakest part on your shovel. It may mean shut-down losses. Use the best — and — keep extra chain on hand for the emergency.

S. G. TAYLOR CHAIN CO.

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Unknown quality is only a mirage of safety

The desert is dotted with the bones of men, deceived by some mirage. Likewise the business trail is strewn with evidence of calamity caused by the mirage of unknown quality.

The wisdom of protection through KNOWN quality has long been recognized by shrewd business men. That wisdom is likewise recognized by the Williamsport Wire Rope Company who have eliminated the mirage of unknown quality in

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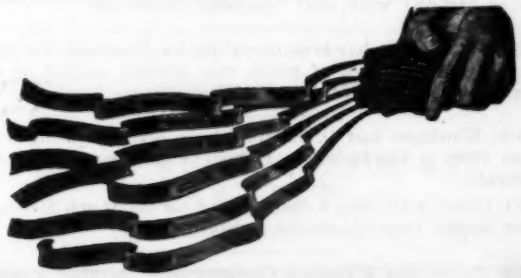

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SHOTS FROM THE FIRING LINE — Continued

M. S. Madden Construction Co., Kansas City, Missouri, received award for construction of 3683 yards 8-inch plain concrete paving on Grand Avenue, 75th to 77th Streets, Kansas City, Missouri, at $2.60 per square yard.

Oklahoma Notes

BY F. W. KNABLE

Acme Coal Company, Stigler, Oklahoma, are overhauling their Bucyrus 225-B steam shovel. The work is being done under the direction of the erector, Mr. Ed. King, of the Bucyrus Company.

J. W. Mann, contractor, Cotton Exchange Building, Oklahoma City, received award for grading and graveling 46,000 square yards Roads Nos. 2, 5 and 6, Washita County, Oklahoma, $184,210.

Ward-Beekman & Brooks, Inc., 1701 East 9th Street, Oklahoma City, received award for the construction of 8,200 yards of 7-inch concrete paving in District No. 10, $35,603.

Standard Paving Company, Tulsa, Oklahoma, received award for construction of Federal Aid Project 139-H, 6.4405 miles concrete paving, $160,881. This work is located in Noble County, Oklahoma.

Tom Green, contractor, Oklahoma City, received award for 20.698 miles concrete paving, $190,000.

Pacific Coast Notes

BY P. H. BIRCKHEAD

The Northern California Railroad Co., a subsidiary of the Red River Lumber Company, Monadnock Building, San Francisco, has been incorporated, and plans the construction of 31 miles of railroad from Crescent Mills, Plumas County, to Westwood.

At an election held on September 27 by the Sacramento Municipal Utility District, proposition to vote $11,600,000 for construction of Silver Creek supply project for the city failed to carry by the necessary two-thirds majority.

Frank Eberly, C. J. Johnson, E. Blanton and Frank Jenson have been operating for the H. H. Boomer Company on the Feather River power project near Quincy.

L. A. Roberts and Joe Lacy ran the Youdall Construction Company's Bucyrus 30-B tunnel shovel through the whole of the construction of the mile long Duboce Tunnel in San Francisco. Mr. Lacy is now about ready to open up a quarry of his own in San Leandro, California.

A. A. Arms and Ed Haney are with Guerin Brothers Company on highway work near Cromberg, California.

Rod Haney, who has been operating for Granfield, Farrar & Carlin for a number of years, was recently elected as a delegate to the San Francisco Building Trades Council.

Otto Kinsinger and O. Bortfeld have been operating for Marsh Bros. & Gardenier on railway work near Standard, California.

Ed. Lucas is running a Erie G. A. 2 for the Hetch Hetchy Water Supply near Livermore, California.

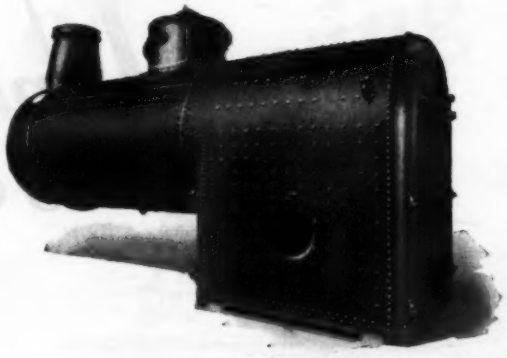
The Pacific Gas & Electric Company have installed a new Bucyrus 120-B electric shovel for use on the construction of a rock-filled dam, involving about two million cubic yards which is to be built about fifty miles from Martel, California.

Southern California and Arizona Notes

Southern California

BY J. H. SACKETT

Contract has been recently awarded to Charles U. Heuser by the City of Glendale for the improvement of Verdugo



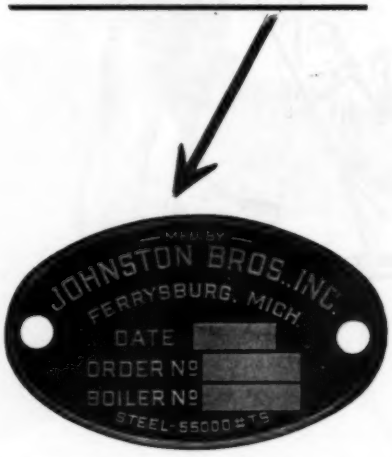
YOU SELECT your equipment for its adaptability to your work.

For its power — speed — durability — rugged strength — efficiency.

Do not all of these depend upon the boiler?

Can you afford to consider anything less than the very best?

DO YOU LOOK FOR

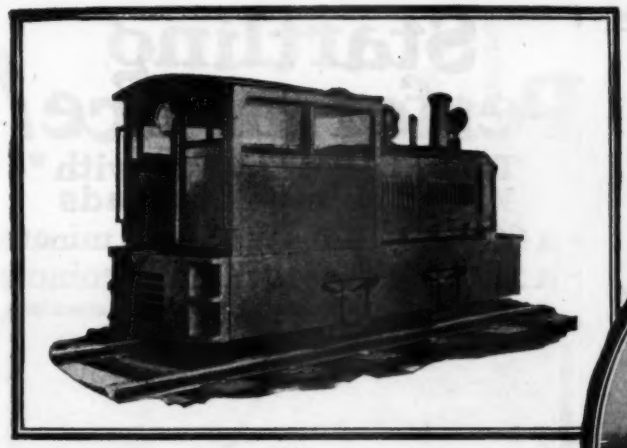


JOHNSTON BROS., Inc.

Specializing in Boilers for Contractors' Equipment

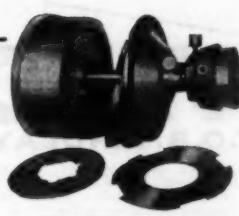
FERRYSBURG, MICHIGAN

In writing to Johnston Bros., Inc., please use post card bound in the center of this number.



Every "Whitcomb" is mechanically correct — Designed to Work — Built to Overwork.

Uninterrupted Haulage



The Whitcomb Clutch

The Clutch above illustrated is the Whitcomb clutch, designed and made throughout in our own factory.

It is made up of malleable iron discs, which by means of cork-studded surfaces, grip other discs made of saw steel. The clutch runs in oil and for this reason it is practically impossible for it to burn out.

The real value of Whitcomb Locomotives lies in their ability to give constant, dependable service without a day off and with a minimum of upkeep and expense.

"Whitcombs" increase the contractor's profit by setting the pace for all operations. Economical hauling of yardage, road forms, batch cars and other modern road building materials is easy for Whitcombs with their more than ample horse power per ton of weight, short overhang, low center of gravity, high track clearance, ease of handling, cab convenience and safety.

Whitcomb Locomotives are made in sizes of 3½ to 35 tons powered either by gasoline engines or by electric motors.

Let us send you bulletins on "Whitcomb—Designed to Work—Built for Overwork."

GEO. D. WHITCOMB COMPANY
Plant at Rochelle, Illinois
Offices in all principal cities

GASOLINE — STORAGE BATTERY — ELECTRIC

WHITCOMB

LOCOMOTIVES

SHOTS FROM THE FIRING LINE — Continued

Road and other streets of that city. This work consists of asphalt paving, vitrified pipe sewers, water system, etc.

The Callahan Construction Company, 1730 Industrial Street, Los Angeles, have recently been awarded contract for the construction of reinforced concrete and cement pipe sewer drains in Drainage Improvement District No. 21 for the County of Los Angeles. We understand at this time that the contractor is progressing nicely with this job.

Plans are being prepared by Victor E. Trace, water superintendent for the City of Santa Barbara, for the enlargement of the Sheffield reservoir. It is planned to enlarge this reservoir to a capacity of 50,000,000 gallons by raising the dam 25 feet. The reservoir is to be relined with concrete.

Plans are being prepared by Mr. Trace for the proposed Mono dam and other tunnels through the mountains as auxiliaries to the city water system.

Plans and specifications have been prepared by Los Angeles County Flood Control Department, Los Angeles, E. C. Eaton, Chief Engineer, for the Big Dalton Dam, to be a multiple arch dam. The new dam will be built 400 feet farther upstream than the original plans, which called for rock fill type, but this has been abandoned.

Arizona

Contractor Lee Moor of Tucson, Arizona, has been a visitor in Los Angeles several times during the last month. Mr. Moor now has his Bucyrus 30-B Diesel machine employed on sewer work in Tucson.

Southern States Notes

BY W. W. WHORLEY

A large number of contractors attended the letting of the Tennessee State Highway Department at Nashville on September 16th. This was the largest letting in the history of the Department and the work awarded amounted to nearly six million dollars.

The Associated General Contractors of America held the Fall meeting of the Executive Board, Advisory Board, President's Council and Secretaries' Council in Birmingham, October 17-19 inclusive. Many problems of interest to contractors and builders were discussed.

Mr. Alex Patterson is in charge of construction of the Birmingham Tuscaloosa Highway for the State Highway Department below Tuscaloosa, Alabama.

The Central Iron & Coal Company have recently installed the third Bucyrus 50-B shovel in the brown ore mine at Giles, Alabama. This shovel replaces the last of their railroad-type shovels and makes this one of the most up-to-date and well-equipped brown ore mines in the district. Mr. John Shackelford is in charge.

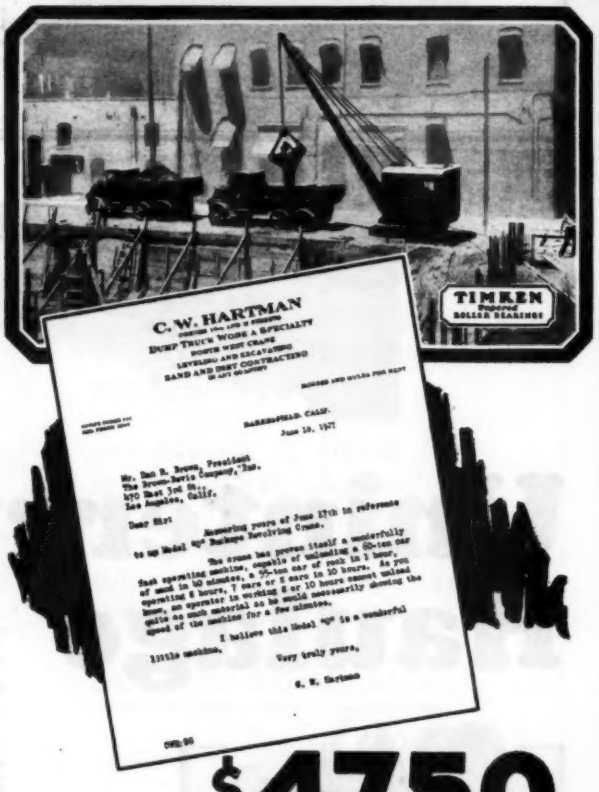
Mr. R. L. Cheshire is in charge of Bucyrus Class-180 dragline B-23 for the Second District M. R. C. The dragline is located at Whitehall Landing, Arkansas, at the mouth of the St. Francis River and is closing a break in the levee at that point.

Repair work is being pushed at a rapid rate by the Government forces at Mounds Landing, Mississippi, in order to close this break before the high water returns. Three suction dredges and three tower excavators have been concentrated at this point.

The Tallassee Power Company, a subsidiary of the Aluminum Company of America, has begun preliminary operations on a new power dam on the Little Tennessee River near Calderwood, Tennessee.

Startling Performance!

This little Buckeye with ⅜-yard clamshell unloads
- a 60-ton car of sand in 40 minutes
- a 55-ton car of rock in 60 minutes


TIMKEN
ROLLER BEARINGS
C. W. HARTMAN
DUMP TRUCK WORK A SPECIALTY
SHOVEL AND CRANE WORK
LEVELING AND EXCAVATING
SAND AND DIRT CONTRACTING
BAKERSFIELD, CALIF.
June 18, 1927
Mr. Dan R. Brown, President
The Brown-Davis Company, Inc.
970 East 3rd St.
Los Angeles, Calif.
Dear Sir:
Answering yours of June 17th in reference
to an Model 40 Buckeye Revolving Crane.
The crane has proven itself a wonderfully
fast operating machine, capable of unloading a 60-ton car
of sand in 40 minutes, a 55-ton car of rock in 1 hour;
operating 8 hours, I have or 5 cars in 10 hours. As you
know, an operator in working 8 or 10 hours cannot unload
quite as much material as he could necessarily showing the
speed of the machine for a few minutes.
I believe this Model 40 is a wonderful
little machine.
Very truly yours,
C. W. Hartman

$4750
F.O.B. FINDLAY

The price of this Buckeye is as remarkable as its performance.

is the price of this full-revolving Buckeye Model O Crane without clamshell or cab. Withal its multiplied working ability — as Crane, Ditcher and Backfiller — it is light, fast and dependable.

Its surprisingly low cost is made possible by large production of one standard size.

It measures up fully to every Buckeye construction detail. Write for descriptive bulletin and check up the details yourself.

The
Buckeye Traction Ditcher Company — Findlay, Ohio

There's a Buckeye Sales and Service Office near You

Buckeye FOR OVER 30 YEARS

In writing to The Buckeye Traction Ditcher Co. please use post card bound in the center of this number.

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Crawler Tractors

Power!

TODAY, more than ever before, larger implements and tandem equipment are being used on big road and land development jobs everywhere. It is the one sure way to cover ground more quickly and to cut time and costs on every project. *Graders of greater capacity — dump wagon and scraper trains instead of single units — this is the modern trend!*

Such peak loads demand the power reserve and the sure-footed traction that CLETRAC delivers in fullest measure. CLETRAC *has a record of greater draw-bar pull in proportion to its weight than any other tractor built!* It has an exceptional power reserve. It has instantaneous "One-Shot" lubrication to save the time of greasing and oiling. It has speed, easy handling, short turning — *every feature* for making it the most useful and profitable power unit you can possibly purchase.

Built in a Complete Range of Sizes

There is a CLETRAC Crawler Tractor to fit the power specifications of every industrial tractor operation. The CLETRAC 20—the CLETRAC 30—and the CLETRAC 100 completely cover every power requirement you are called upon to meet.

WRITE—or mail the coupon—today for full particulars of any or all CLETRAC models.

The Cleveland Tractor Co.
Cleveland, Ohio

THE CLEVELAND TRACTOR CO.,
Cleveland, Ohio.

Please send complete literature covering
Cletrac 20 Cletrac 30 Cletrac 100

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SHOTS FROM THE FIRING LINE — Continued

St. Louis Items

BY A. B. KOENIG

The J. W. McMurry Contracting Co. were awarded contract by Frisco Railroad for rebuilding old piers across Black River at Black Rock, Arkansas.

R. Frell has a 2-yard 60-foot boom dragline that he wants work for. Twin Valley, Minnesota, will catch him.

Mulvill Bros., Box 185, Alton, Illinois, have a 10-team outfit for sale. They have 20,000 yards of grading that they will let to the buyer.

Redmond S. Colnon, of the Fruin-Colnon Contracting Co., died here on October 9th of a complication of diseases at the age of 65 years.

J. P. McNulty was awarded contract for paving 24 blocks of streets in West Pine Bluff, Arkansas, in paving district No. 99.

Dave Keating, 6014 Pershing Avenue, St. Louis, has a good machine outfit idle that he can place on work immediately.

W. B. Carter of Tulsa, Oklahoma, was awarded contract for the new sewer extensions and the new disposal works at Conway, Arkansas. His bid was $126,797.75.

M. R. Deyo was awarded contract for bridge on Route 78, Section 134 B, Fulton County, Illinois.

S. J. Groves & Sons, Minneapolis, was awarded contract for grading Route 89, Section 115 A, Bureau County, Illinois.

P. J. Murphy finished highway job in Monroe County, Missouri, and has machine outfit idle. His address is 827 South Williams Street, Moberly, Missouri.

G. C. Fairelo was awarded bridge contract on Route 89, Section 115B, Bureau County, Illinois.

John Ryan, Box 346, Cudahy, Wisconsin, has a six-team fresno outfit idle that he wants work for.

H. M. Johnson and M. C. Robinson were awarded bridge contracts in Macoupin County, Illinois.

Ed Opie, Tuscola, Illinois, wants work for a six-team fresno outfit.

Yale & Reagan, Merchants Laclede Building, St. Louis, Missouri, have about 200,000 yards of levee work at Cairo, Illinois, to sublet. This job is suitable for 4-yard car outfit.

Canada

Montreal and Vicinity

BY J. M. WARD

J. P. Porter & Sons are getting a good start on the Canadian National Railway work at Shawinigan Falls, Quebec. Mr. Baker is in charge.

Tenders went in for the $1,500,000 harbor work at Chicoutimi — there were seven bids. The contract was awarded to Quinlan, Robertson & Janin, Limited, of Montreal.

Gorman & Peckham have made wonderful progress on their protection wall work on Lake St. John in the town of Roberval. This work is being done for the Duke-Price Power Co. They are using a Bucyrus 20-B, a Marion model 28 and a Byers Bearcat. All the hauling is done by trucks.

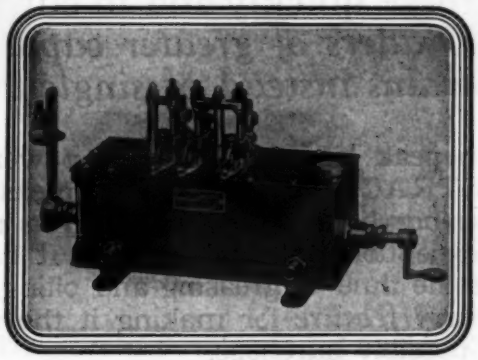
Devito Bros. have been awarded sewer contract in Greenfield Park, Quebec.

A McCord Force Feed Lubricator Will Keep Your Shovel on the Job

A McCord force feed lubricator installed on your steam shovel now will insure more continuous operation. Dependable force feed lubrication prevents shutdowns and delays, it gives more hours on the job.

McCord force feed lubricators are used as standard equipment by the largest and best-known steam shovel builders and they will be installed on any shovel at your request.

Put a McCord lubricator on now and be assured of dependable lubrication for the life of your shovel.



McCord Class B. A. Force Feed Lubricator

McCord Radiator & Mfg. Co.
Detroit, Michigan

McCord
force feed
Lubricators

In writing to McCord Radiator & Mfg. Co. please use post card bound in the center of this number.

A Winning Combination

The Ingersoll-Rand Oil Engine Air Compressor and I-R Rock Drills are an unbeatable team in the game of cost reduction. In quarries, mines, and contract work, I-R Rock Drills are constantly demonstrating their superiority. Type POC Air Compressors have proved their reliability and low-cost operation in numerous installations.

I-R "Jackhamers," Drifters, and Steel Sharpeners are available in many sizes, each built for a specific class of work. Type POC Compressors, as illustrated above, have piston displacements of 350, 600, and 900 cu. ft.

INGERSOLL-RAND COMPANY
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Offices in principal cities the world over
For Canada Refer—Canadian Ingersoll-Rand Co., Limited, 10 Phillips Square, Montreal, Quebec

112 SOE

Ingersoll-Rand

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SHOTS FROM THE FIRING LINE — Continued

The Newton Construction Co. of Sherbrooke has been awarded contract for new dam and power house for the city of Sherbrooke, Quebec.

Dan Verochio is taking out the excavation for the new Bell Telephone Building on Beaver Hall Hill, Montreal.

Campbell & Rutherford have taken out the excavation for the new Confederation Building, Montreal.

Big agitation is on to have the construction of the Abitibi Southern Railway proceeded with. The company claims they are merely waiting for subsidy action on the part of the Provincial Government.

The Canadian Pacific Railway Company has had a party out for some time surveying alternative lines to the Lake St. John district. It is expected that the construction work will be proceeded with shortly.

Toronto and Vicinity

BY G. E. GREEN

The Pigott-Healy Construction Co., Ltd., of Hamilton, have a contract for a large hotel at Niagara Falls, Ontario, which is to be known as the General Brock.

Nelson River Construction, Limited, are well up to schedule on the Glen Road Bridge, Toronto, and are pushing the job through in good shape.

Toms Contracting Co., Ltd. of Toronto have just started work on a large paperboard plant at the foot of Cherry Street, Toronto.

The John V. Gray Construction Co. are making good progress on the construction of the new Richmond Building, Richmond Street, Toronto.

In muck and mire

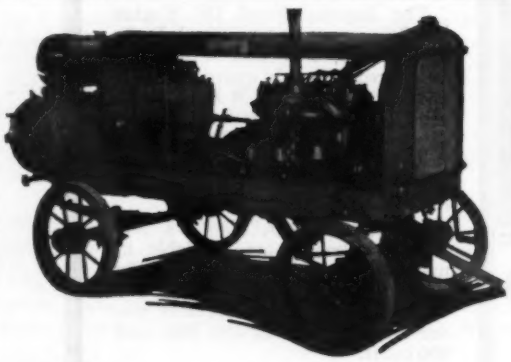
—or in rocky soil or gravel Hayward Buckets give "full measures of service".

Watch a Hayward in action! See it dig in rapidly, pick up an over-capacity load. Note how quickly it dumps.

Let our engineers fit a Hayward to your job.

THE HAYWARD COMPANY
52-54 Church St. New York, N. Y.

Hayward Buckets



"Schramm" Multi-Cylinder Engine Driven

Compressors

We are glad to say that the Schramm Compressors in the field have, without exception, given uninterrupted power under all conditions of structural and road service.

Some of the outstanding features: Powerful "Buda" Engines coupled to large capacity Schramm Compressors. (Also made with electric motor drive.) Capacities from 60 to 240 cu. ft. Gasoline strainers to keep grit and dust out of the carburetor. Heavy-duty clutch permits easy starting—cut in the compressor after the engine is "warmed up". Adapted to truck, trailer or skid mounting, or for use with a tractor.

A card brings the Schramm Catalog. We are glad to advise you on any compressor problem. Write.

For Mounting on Ford and Other Trucks

Schramm Inc., Manufacturers
West Chester, Penna.
Offices and Representatives in Principal Cities

Roebling

"Blue Center" Steel Wire Rope

Fabricated in constructions particularly adapted for excavating machinery.

John A. Roebling's Sons Co.
Trenton, N. J.

Bucyrus Rail Chair

(Patented June 23, 1917)

SAVE time and money in handling your Working Track. This one-piece cast steel chair holds the rails securely — they cannot turn over — no bridle bars or fish plates are required.

The rails can be placed or removed instantly — no bolts to juggle with — the connection is made with a taper-pointed pin.

Plenty of flexibility, yet ends of rail held firmly

Ask for Bulletin S-40

BUCYRUS COMPANY
SPECIALTY DEPARTMENT
SOUTH MILWAUKEE, WISCONSIN

TRADE NOTES

Mr. J. J. Hilt has become associated with the *Young Radiator Company* as sales manager, having assumed these duties August 20th. Mr. Hilt has been associated with the Racine Radiator Company and its predecessor, the Perfex Radiator Company, since 1919, and has had a long experience in this field, having been associated with Mr. F. M. Young, president of the Young Radiator Company, in the former companies as assistant to Mr. Young and in various capacities.

BOOK REVIEWS

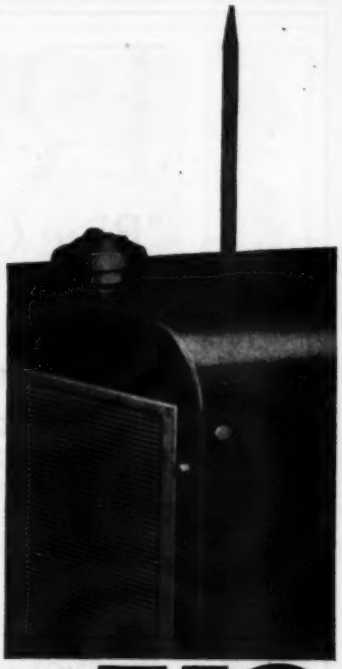
We shall be glad to review such books and catalogs as are sent us

THE FAIRFIELD WAY — Bulletin No. 65 — Size 8 x 10¾, 12 pages, well illustrated with diagrams and photographs. This bulletin describes the line of portable belt conveyors manufactured by the *Fairfield Engineering Company*. Copies may be obtained by addressing the company at Marion, Ohio.

WHITCOMB LOCOMOTIVES — Size 8½ x 11, 16 pages. This is bulletin No. 2723 issued by the *Geo. D. Whitcomb Company*, manufacturers of locomotives, covering the following machines: Class WVAU-6, Class CKU-7, and Class CTU-8. The bulletin contains valuable data, interesting photographs and diagrams, and various valuable tables.

Here's what we mean by

vibrationless

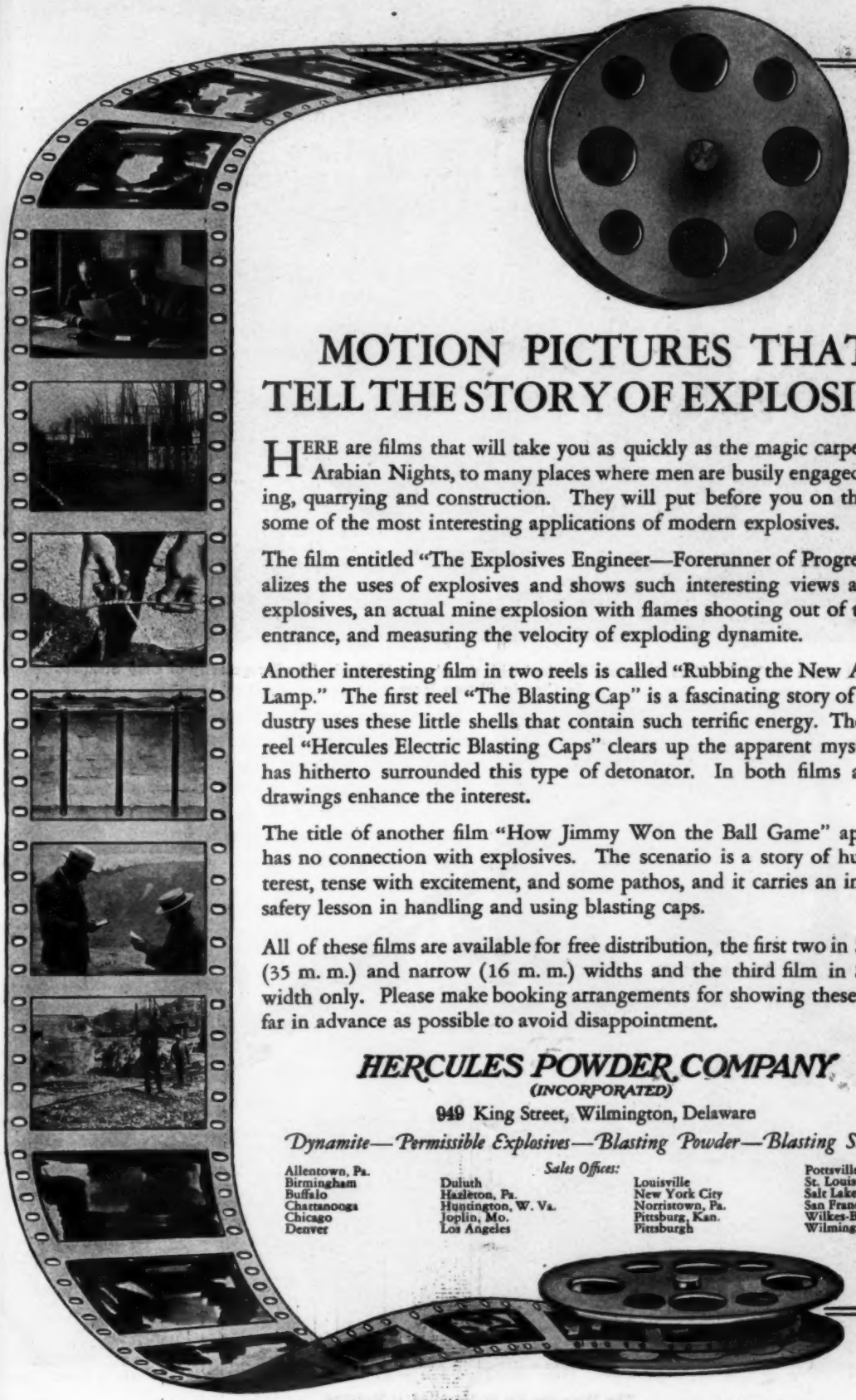


This 2-cylinder Novo Rollr Engine is running at 1800 r. p. m. The pencil standing on top remains *motionless*. That's what we mean by *"Vibrationless."* Send today for complete details.

NOVO ENGINE CO.
222 Porter Street
LANSING, MICHIGAN

NOVO THE NEW NOVO ROLLR ENGINES

Clarence E. Bement Vice-Pres. & Gen. Mgr.



MOTION PICTURES THAT TELL THE STORY OF EXPLOSIVES

HERE are films that will take you as quickly as the magic carpet of the Arabian Nights, to many places where men are busily engaged in mining, quarrying and construction. They will put before you on the screen some of the most interesting applications of modern explosives.

The film entitled "The Explosives Engineer—Forerunner of Progress" visualizes the uses of explosives and shows such interesting views as testing explosives, an actual mine explosion with flames shooting out of the mine entrance, and measuring the velocity of exploding dynamite.

Another interesting film in two reels is called "Rubbing the New Aladdin's Lamp." The first reel "The Blasting Cap" is a fascinating story of how industry uses these little shells that contain such terrific energy. The second reel "Hercules Electric Blasting Caps" clears up the apparent mystery that has hitherto surrounded this type of detonator. In both films animated drawings enhance the interest.

The title of another film "How Jimmy Won the Ball Game" apparently has no connection with explosives. The scenario is a story of human interest, tense with excitement, and some pathos, and it carries an important safety lesson in handling and using blasting caps.

All of these films are available for free distribution, the first two in Standard (35 m. m.) and narrow (16 m. m.) widths and the third film in Standard width only. Please make booking arrangements for showing these films as far in advance as possible to avoid disappointment.

HERCULES POWDER COMPANY
(INCORPORATED)
949 King Street, Wilmington, Delaware

Dynamite—Permissible Explosives—Blasting Powder—Blasting Supplies

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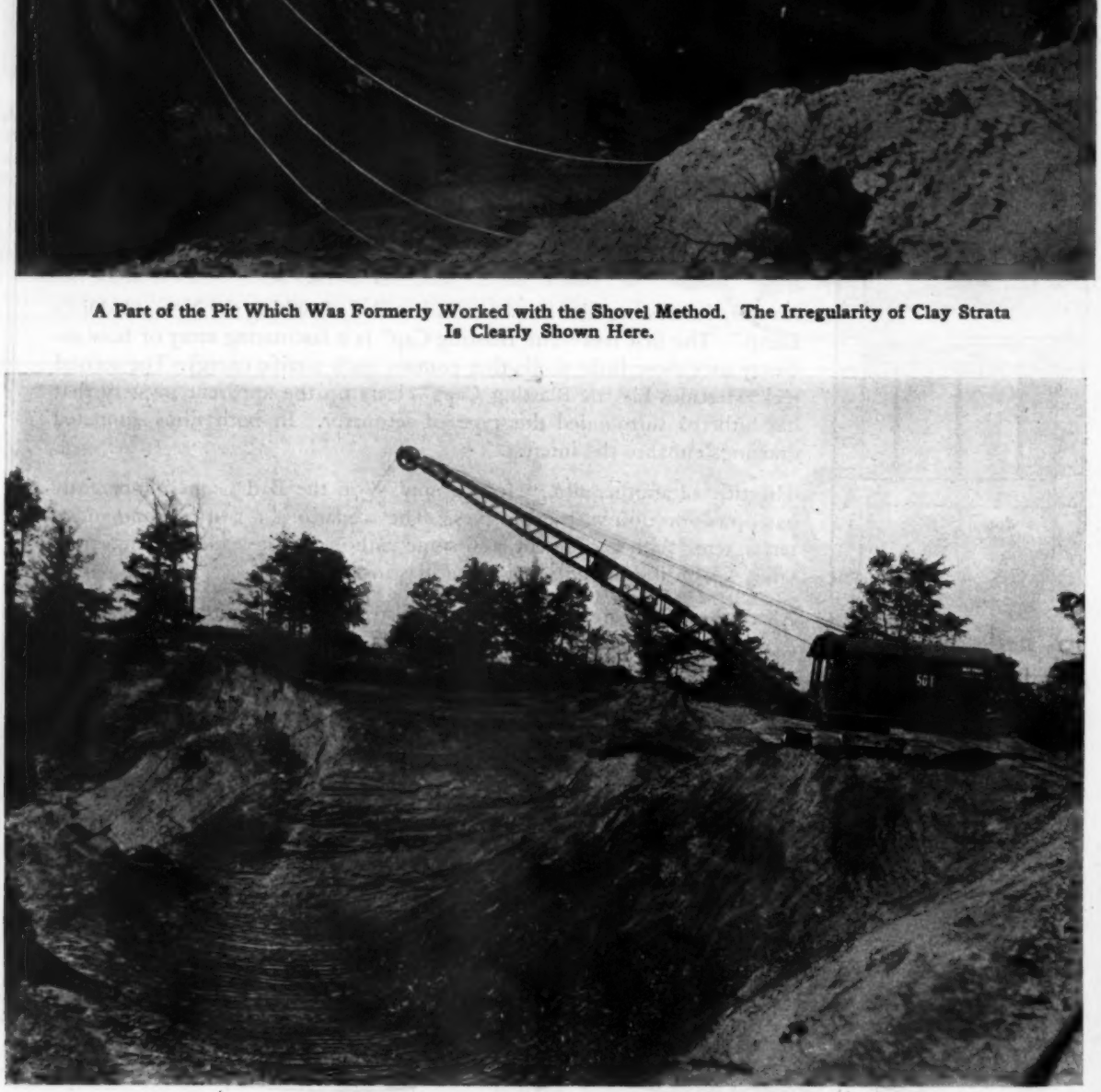
A Part of the Pit Which Was Formerly Worked with the Shovel Method. The Irregularity of Clay Strata Is Clearly Shown Here.



The Way the Pit Is Handled at Present.